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BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

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| EXAMINER |
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WILKINS III, HARRY D

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07/29/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/645,132

Applicant(s)

REINHARD, FRED P.

Examiner

Harry D. Wilkins, III

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 June 2008 has been entered.

Claim Interpretations

2. The claims require a certain amount of clarification to establish their exact scope with respect to the prior art of record. The present claims require a spacer, interposed between the membrane and each of the anode electrode and cathode electrode. The spacer provides the function of defining the distance between each of the electrodes and the membrane. Of note is that Applicant has amended the claims, which did recite that the spacer was interposed between the membrane and the cell frames.
3. The claims also require that a compartment be formed “between the first cell frame and the second cell frame” and that the compartment “house[s] an anode electrode, a cathode electrode and a membrane”.
4. From the drawings as filed, the cathode electrode is disclosed as always being located interior to the cathode cell frame. The anode electrode may be disclosed either interior to the anode cell frame or as a self-supported element as seen in figures 2 and 4.
5. Thus, the present claim is being interpreted, in light of the disclosure by Applicant, to mean that the screen spacer is located in a position intermediate the membrane and the support structure for the anode or cathode. In the case of the anode or cathode being located interior of the corresponding cell frame, the cell frame is the support structure. In the case of the anode being self-supported, the support structure is considered to be the frame (e.g.-261) of the self-supported anode. By the spacer being intermediate of the support structure and the membrane, a spacing function can

be created to establish a set distance between the electrode and the membrane. This interpretation is also consistent with dependent claims 3 and 4.

6. The recitations in claim 1 “for purification of an in-flow solution”, “to receive the in-flow solution including the contaminant metal” and “to output a solution without the contaminant metal”, and in claim 19 “to purify the process solution by removing chemical elements” and “with the process solution being input at the cathode over which the chemical elements are removed by migration of the chemical elements through the first membrane to the anode and collected within a solution processed at the anode and being different from the process solution”, are related to the manner of operation of the claimed device. As such, they are considered an intended use of the claimed structure, and accordingly, not given patentable weight. See MPEP 2114 and 2115. Applicant has failed to structurally distinguish the claimed invention from the prior art.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 6, 7 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoi et al (JP 61-056289).

Inoi et al anticipate the invention as claimed. Inoi et al teach (see English abstract and figures 1 and 2) an apparatus including a first cell frame (C₁), a second cell frame (A₁) including an inlet (7) and an outlet (6) arranged above the inlet, a

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compartment formed between the first and second cell frames including an anode electrode (A), a cathode electrode (C) and a membrane (M) positioned in between and screen spacers (P_m) interposed between the anode electrode (A) and the membrane (M) and between the cathode electrode (C) and the membrane (M) as this claim is interpreted (see above in paragraphs 2-5). Further, Inoi et al teach (see English abstract) that the spacers (P_m) had the function of permitting precise spacing of the anode or cathode from the membrane.

Regarding claims 6 and 7, these claims relate to the manner in which the claimed apparatus operates. The manner in which an apparatus is not given patentable weight as long as the apparatus was capable of operating in the claimed fashion. See MPEP 2114. The device of Inoi et al would have been capable of operating in the claimed fashion. Thus, Inoi et al teaches the structure of the apparatus as claimed.

Regarding claim 11, Inoi et al teach (see figure 1) including inflow and outflow ports in both cell frames.

9. Claims 1-4, 6, 7 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Faita (US 5,770,035).

Faita anticipate the invention as claimed. Faita teaches (see figure 1) an electrolyzer including a first cell frame (7) including an anode (4) therein, a second cell frame (14) including a cathode (10) therein and a compartment formed between the first cell frame and the second cell frame wherein a membrane (1) is positioned intermediate the anode and cathode. Each of the first and second cell frames included two ports along the perimeter of the frame, with one port above the other port.

With respect to the in-flow port being located above the out-flow port, this limitation is related to the manner of operation of the claimed structure. Each of the ports in the apparatus of Faita would have been capable of operating either as an input or as an output. Applicant has failed to distinguish the claimed structure from the prior art structure.

Further, Faita teaches an out-flow port 6 being located above an in-flow port 5. The claim does not define which cell frame was used to house which electrode (anode or cathode).

Faita teaches gaskets (15 and 16) placed intermediate each of the first cell frame or the second cell frame and the membrane. These gaskets function as "screen spacers" as claimed. In particular, the spacers function to keep the two cell frames a set distance apart and to clamp the membrane in between. Since the anode and cathode each "stick out" a set distance from the back of the corresponding cell frame, and the spacers function to provide a set distance between the cell frames, they also provide a set distance between the electrodes and the membrane.

Regarding claim 2, Faita teaches gaskets placed on each side of the membrane.

Regarding claims 3 and 4, Faita teaches (see paragraph spanning cols. 3 and 4) using a screen anode and a mesh cathode. Faita teaches (see col. 5, lines 36-65) attaching the anode and cathode to corresponding bus bars.

Regarding claims 6 and 7, these claims relate to the manner in which the claimed apparatus operates. The manner in which an apparatus is not given patentable weight as long as the apparatus was capable of operating in the claimed fashion. See MPEP

2114. The device of Faita would have been capable of operating in the claimed fashion. Thus, Faita teaches the structure of the apparatus as claimed.

Regarding claim 11, the apparatus of Faita included two ports in both of the cell frames and utilized a cross-flow regime where at the top was a single in-flow port and a single out-flow port and at the bottom was a single in-flow port and a single out-flow port.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 14-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoi et al (JP 61-056289) with evidence from "Newest News About Brown's Gas".

The teachings of Inoi et al are described above.

Inoi et al do not teach a sidewall or endwall of the second cell frame being transparent or translucent.

One of ordinary skill in the art would have found it obvious to have made either or both of the sidewall and endwall of a cell frame to be transparent in order that the indicators of a reaction (such as formation of gas bubbles) might be viewed by the operator.

Evidence that such modification was known to one of ordinary skill in the art of electrolyzers can be seen in "Newest News About Brown's Gas". On the first page is

described and pictured, an electrolyzer made from a transparent housing so that internal formation of bubbles could be visually detected while the electrolyzer was being operated. Thus, the Examiner has shown that it was well within the knowledge of one of ordinary skill in the art to make portions of an electrolyzer transparent for the purpose of allowing visual inspection of reaction progression, particularly for noticing the formation of gas bubbles.

Regarding claim 16, Inoi et al teach (see figure 1) including multiple sets of first and second frames, each set separated by another frame (P_a or P_c). This additional frame would be expected to be made of non-conductive material to prevent short circuiting between adjacent cells.

Regarding claim 18, these claims relate to the manner in which the claimed apparatus operates. The manner in which an apparatus is not given patentable weight as long as the apparatus was capable of operating in the claimed fashion. See MPEP 2114. The device of Inoi et al would have been capable of operating in the claimed fashion. Thus, Inoi et al teaches the structure of the apparatus as claimed.

12. Claims 8-10 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoi et al (JP 61-056289) in view of Hirai et al (US 5,783,051) with evidence from "Newest News About Brown's Gas" (for claims 10 and 19).

The teachings of Inoi et al are described above.

However, Inoi et al are silent with respect to how the two cell frames are joined together.

Hirai et al teach (see figure 3) a conventional way of clamping two or more cell frames together by means of a first clamping frame (end plate) 60 and a second clamping frame (end plate) 60', a plurality of fastening rods 92 inserted through apertures on the clamping frames and a plurality of fastening components (96) positioned on a corresponding end of each rod.

Therefore, it would have been obvious to one of ordinary skill in the art to have used the conventional clamping manner taught by Hirai et al to hold the two frames of Inoi et al together because the clamping manner taught by Hirai et al provided a reliable, but easy to remove, manner for ensuring the cell would stay together.

Regarding claim 10, one of ordinary skill in the art would have found it obvious to have made the sidewall of the second cell frame to be transparent in order that the indicators of a reaction (such as formation of gas bubbles) might be viewed by the operator. It would have been obvious to ensure that any portion of the clamping frame which might block the transparent sidewall to also be transparent, or to have added an opening so that the view would remain clear.

Evidence that such modification was known to one of ordinary skill in the art of electrolyzers can be seen in "Newest News About Brown's Gas". On the first page is described and pictured, an electrolyzer made from a transparent housing so that internal formation of bubbles could be visually detected while the electrolyzer was being operated. Thus, the Examiner has shown that it was well within the knowledge of one of ordinary skill in the art to make portions of an electrolyzer transparent for the purpose

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of allowing visual inspection of reaction progression, particularly for noticing the formation of gas bubbles.

Regarding claims 19 and 20, Inoi et al do not expressly teach a tank containing a process solution to be treated. A process line inherently would have been present connected to in-flow port 5. One of ordinary skill in the art would have considered it obvious to have added a tank to the apparatus of Inoi et al for holding the solution to be treated because the tank would have allowed a buffer of solution to be treated to be stored.

13. Claims 5 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faita (US 5,770,035) with evidence from "Newest News About Brown's Gas".

The teachings of Faita are described above.

Regarding claims 5, 13, 14 and 17, Faita does not teach a sidewall or endwall of the second cell frame being transparent or translucent.

One of ordinary skill in the art would have found it obvious to have made either or both of the sidewall and endwall of a cell frame to be transparent in order that the indicators of a reaction (such as formation of gas bubbles) might be viewed by the operator.

Evidence that such modification was known to one of ordinary skill in the art of electrolyzers can be seen in "Newest News About Brown's Gas". On the first page is described and pictured, an electrolyzer made from a transparent housing so that internal formation of bubbles could be visually detected while the electrolyzer was being operated. Thus, the Examiner has shown that it was well within the knowledge of one

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of ordinary skill in the art to make portions of an electrolyzer transparent for the purpose of allowing visual inspection of reaction progression, particularly for noticing the formation of gas bubbles.

Regarding claims 14 and 15, Faita teaches (see figure 1) a first cell frame 7 including an anode therein, a second cell frame 14 including a cathode therein and a compartment formed between the first cell frame and the second cell frame wherein a membrane is positioned intermediate the anode and cathode. Faita further teaches gaskets (15 and 16) placed intermediate each of the anode or cathode and the membrane.

Regarding claim 16, it would have been obvious to one of ordinary skill in the art to have duplicated the individual cell of Faita by adding a third (identical to first) cell frame and a fourth (identical to second) cell frame in order to increase production capacity of the device. It would have been obvious to one of ordinary skill in the art to have added a non-conductive spacer frame between the two cells in order to have avoided crushing the second and third (or first and fourth) cell frames.

Regarding claim 18, this claim relates to the manner in which the claimed apparatus operates. The manner in which an apparatus is not given patentable weight as long as the apparatus was capable of operating in the claimed fashion. See MPEP 2114. The device of Faita would have been capable of operating in the claimed fashion. Thus, Faita teaches the apparatus as claimed.

Regarding claims 19 and 20, Faita does not expressly teach a tank containing a process solution to be treated. A process line inherently would have been present

connected to in-flow port 5. One of ordinary skill in the art would have considered it obvious to have added a tank to the apparatus of Faita for holding the solution to be treated because the tank would have allowed a buffer of solution to be treated to be stored.

14. Claims 8-10 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faita (US 5,770,035) in view of Hirai et al (US 5,783,051) with evidence from "Newest News About Brown's Gas" (for claims 10 and 19).

The teachings of Faita are described above.

However, Faita is silent with respect to how the two cell frames are joined together.

Hirai et al teach (see figure 3) a conventional way of clamping two or more cell frames together by means of a first clamping frame (end plate) 60 and a second clamping frame (end plate) 60', a plurality of fastening rods 92 inserted through apertures on the clamping frames and a plurality of fastening components (96) positioned on a corresponding end of each rod.

Therefore, it would have been obvious to one of ordinary skill in the art to have used the conventional clamping manner taught by Hirai et al to hold the two frames of Faita together because the clamping manner taught by Hirai et al provided a reliable, but easy to remove, manner for ensuring the cell would stay together.

Regarding claim 10, one of ordinary skill in the art would have found it obvious to have made the sidewall of the second cell frame to be transparent in order that the indicators of a reaction (such as formation of gas bubbles) might be viewed by the

operator. It would have been obvious to ensure that any portion of the clamping frame which might block the transparent sidewall to also be transparent, or to have added an opening so that the view would remain clear.

Evidence that such modification was known to one of ordinary skill in the art of electrolyzers can be seen in "Newest News About Brown's Gas". On the first page is described and pictured, an electrolyzer made from a transparent housing so that internal formation of bubbles could be visually detected while the electrolyzer was being operated. Thus, the Examiner has shown that it was well within the knowledge of one of ordinary skill in the art to make portions of an electrolyzer transparent for the purpose of allowing visual inspection of reaction progression, particularly for noticing the formation of gas bubbles.

Regarding claims 19 and 20, Faita does not expressly teach a tank containing a process solution to be treated. A process line inherently would have been present connected to in-flow port 5. One of ordinary skill in the art would have considered it obvious to have added a tank to the apparatus of Faita for holding the solution to be treated because the tank would have allowed a buffer of solution to be treated to be stored.

15. Claims 1-7 and 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipsztajn et al (US 4,915,927) in view of Faita (US 5,770,035) with evidence from "Newest News About Brown's Gas" (for claims 5, 13, 14 and 17).

Lipsztajn et al teach (see abstract and figure 1) a membrane electrolyzer including a first cell frame including an anode, a second cell frame including a cathode

and a membrane 24 positioned between the anode and cathode. Each of the cell frames included two ports, located in an above-below relationship.

With respect to the in-flow port being located above the out-flow port, this limitation is related to the manner of operation of the claimed structure. Each of the ports in the apparatus of Lipsztajn et al would have been capable of operating either as an input or as an output. Applicant has failed to distinguish the claimed structure from the prior art structure.

Lipsztajn et al do not teach using screen spacers between the electrodes and the membrane. Faita teaches (see figure 1) a cell made from cell frames wherein a screen spacer (gaskets 15 and 16) are used to provide a seal between the cell frames and a membrane to prevent electrolyte leakage and to provide a set separation of anode and cathode. Therefore, it would have been obvious to one of ordinary skill in the art to have used screen spacers (gaskets) as taught by Faita in the cell of Lipsztajn et al because the spacers provide a cell between cell frames and a membrane to prevent electrolyte leakage.

Regarding claims 3 and 4, Lipsztajn et al do not teach the shape of the anode and cathode. One of ordinary skill in the art would have found it obvious to have made the anode and cathode from mesh screens because mesh electrodes provide certain known advantages such as increased surface area over monolithic electrodes.

Regarding claims 5, 13, 14 and 17, one of ordinary skill in the art would have found it obvious to have made the either or both the sidewall or end wall of the second

cell frame to be transparent in order that the indicators of a reaction (such as formation of gas bubbles) might be viewed by the operator.

Evidence that such modification was known to one of ordinary skill in the art of electrolyzers can be seen in "Newest News About Brown's Gas". On the first page is described and pictured, an electrolyzer made from a transparent housing so that internal formation of bubbles could be visually detected while the electrolyzer was being operated. Thus, the Examiner has shown that it was well within the knowledge of one of ordinary skill in the art to make portions of an electrolyzer transparent for the purpose of allowing visual inspection of reaction progression, particularly for noticing the formation of gas bubbles.

Regarding claim 12, as can be seen in figure 1, Lipsztajn et al further teach a non-conductive frame between the first and second frames and a second membrane 18, as claimed. As described above, it would have been obvious to one of ordinary skill in the art to have used screen spacers (gaskets) as taught by Faita in the cell of Lipsztajn et al because the spacers provide a seal between cell frames and a membrane to prevent electrolyte leakage.

Regarding claims 14 and 15, Lipsztajn et al fail to teach the use of screen spacers positioned between the adjacent pieces. As described above, it would have been obvious to one of ordinary skill in the art to have used screen spacers (gaskets) as taught by Faita in the cell of Lipsztajn et al because the spacers provide a seal between cell frames (or electrodes) and a membrane to prevent electrolyte leakage.

Regarding claim 16, it would have been obvious to one of ordinary skill in the art to have duplicated the individual cell of Lipsztajn et al by adding a third (identical to first) cell frame and a fourth (identical to second) cell frame in order to increase production capacity of the device. It would have been obvious to one of ordinary skill in the art to have added a non-conductive spacer frame between the two cells in order to have avoided crushing the second and third (or first and fourth) cell frames.

Regarding claim 18, this claim relates to the manner in which the claimed apparatus operates. The manner in which an apparatus is not given patentable weight as long as the apparatus was capable of operating in the claimed fashion. See MPEP 2114. The device of Lipsztajn et al would have been capable of operating in the claimed fashion. Thus, Lipsztajn et al teach the apparatus as claimed.

16. Claims 8-10 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lipsztajn et al (US 4,915,927) in view of Faita (US 5,770,035) as applied above to claims 1-7 and 11-18, and further in view of Hirai et al (US 5,783,051) with evidence from "Newest News About Brown's Gas" (for claims 10 and 19).

The teachings of Lipsztajn et al are described above.

However, Lipsztajn et al are silent with respect to how the two cell frames are joined together.

Hirai et al teach (see figure 3) a conventional way of clamping two or more cell frames together by means of a first clamping frame (end plate) 60 and a second clamping frame (end plate) 60', a plurality of fastening rods 92 inserted through

apertures on the clamping frames and a plurality of fastening components (96) positioned on a corresponding end of each rod.

Therefore, it would have been obvious to one of ordinary skill in the art to have used the conventional clamping manner taught by Hirai et al to hold the two frames of Lipsztajn et al together because the clamping manner taught by Hirai et al provided a reliable, but easy to remove, manner for ensuring the cell would stay together.

Regarding claim 10, one of ordinary skill in the art would have found it obvious to have made the sidewall of the second cell frame to be transparent in order that the indicators of a reaction (such as formation of gas bubbles) might be viewed by the operator. It would have been obvious to ensure that any portion of the clamping frame which might block the transparent sidewall to also be transparent, or to have added an opening so that the view would remain clear.

Regarding claims 19 and 20, Lipsztajn et al teach (see figure 1) a process line 26 in fluid communication with the membrane electrolyzer. However, Lipsztajn et al do not teach a tank for storing the material to be fed to the electrolyzer. One of ordinary skill in the art would have considered it obvious to have added a tank to the apparatus of Lipsztajn et al for holding the solution to be treated because the tank would have allowed a buffer of solution to be treated to be stored.

Response to Arguments

17. Applicant's arguments filed 20 June 2008 have been fully considered but they are not persuasive. Applicant has argued that Faita does not describe an apparatus that included a screen spacer interposed between the membrane and either anode or

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cathode and which provides a defined distance between the membrane and the electrode.

In response, consistent with the claim interpretation set forth above, Faita teaches two spacers which separate the outer flanges of the cell frames at a specific distance from the membrane. Further, since the electrodes “stick out” a set distance from the back of the cell frame, the spacer inherently possesses the function of setting the distance between the membrane and electrode.

Double Patenting

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

19. Claims 1-7, 11 and 13-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 13 and 14 of copending Application No. 10/763,691 in view of Faita (US 5,770,035). Although the

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conflicting claims are not identical, they are not patentably distinct from each other because each and every feature of the present claims appears in claims 13 and 14 of the '691 application with the exception of the screen spacers. However, Faita teaches (see figure 1) a cell made from cell frames wherein a screen spacer (gaskets 15 and 16) are used to provide a seal between the cell frames and a membrane to prevent electrolyte leakage. Therefore, it would have been obvious to one of ordinary skill in the art to have used screen spacers (gaskets) as taught by Faita in the cell of the '691 application because the spacers provide a cell between cell frames and a membrane to prevent electrolyte leakage.

Regarding claims 3 and 4, the '691 application does not claim the shape of the anode and cathode. However, one of ordinary skill in the art would have found it obvious to have made the anode and cathode from mesh screens because mesh electrodes provide certain known advantages such as increased surface area over monolithic electrodes.

Regarding claims 5 and 13, one of ordinary skill in the art would have found it obvious to have made the either or both the sidewall or end wall of the second cell frame to be transparent in order that the indicators of a reaction (such as formation of gas bubbles) might be viewed by the operator.

Evidence that such modification was known to one of ordinary skill in the art of electrolyzers can be seen in "Newest News About Brown's Gas". On the first page is described and pictured, an electrolyzer made from a transparent housing so that internal formation of bubbles could be visually detected while the electrolyzer was being

operated. Thus, the Examiner has shown that it was well within the knowledge of one of ordinary skill in the art to make portions of an electrolyzer transparent for the purpose of allowing visual inspection of reaction progression, particularly for noticing the formation of gas bubbles.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

20. Claims 8-10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 13 and 14 of copending Application No. 10/763,691 in view of Faita (US 5,770,035) and Hirai et al (US 5,783,051). The claims of the '691 application are silent with respect to how the two cell frames are joined together. Hirai et al teach (see figure 3) a conventional way of clamping two or more cell frames together by means of a first clamping frame (end plate) 60 and a second clamping frame (end plate) 60', a plurality of fastening rods 92 inserted through apertures on the clamping frames and a plurality of fastening components (96) positioned on a corresponding end of each rod. Therefore, it would have been obvious to one of ordinary skill in the art to have used the conventional clamping manner taught by Hirai et al to hold the two frames of Lipsztajn et al together because the clamping manner taught by Hirai et al provided a reliable, but easy to remove, manner for ensuring the cell would stay together.

This is a provisional obviousness-type double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

hdw